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12 MAY 1983

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- Approved

MEMORANDUM FOR: Acting Director of Current Production and Analytic Support, DDI

FROM:

Director of Data Processing

SUBJECT: AIM Evaluation

REFERENCE: Memo to D/ODP, frm D/CPAS, dtd 13 March 83,
same Subject (ODP 83-387)

1. The Office of Data Processing (ODP) appreciates the opportunity to review the Office of Current Production and Analytic Support (CPAS) evaluation of AIM and the support AIM is being given by CPAS. Please accept our apology for taking so long to formally document the feedback that ODP has been providing CPAS orally and through AIM.

2. The CPAS evaluation accurately documents AIM's strengths and weaknesses. The Systems Programming Division (SPD/ODP) is aware of the few deficiencies identified in the CPAS evaluation. SPD is currently working to improve AIM and is committed to seeing that AIM meets the Agency's needs for an electronic mail system.

3. The area where the DI, and CPAS in particular, could be most helpful to ODP is in AIM user documentation. ODP's usual approach to documenting terminal services has been to provide as much documentation as possible online via "HELP" commands, while keeping printed documentation to the minimum essential to introduce new users to these services. We would appreciate detailed feedback on this approach and on the form and content of current AIM documentation. This will enable SPD and our technical writers to improve the user documentation.

4. Your staff may continue to work directly with [redacted], with regard to AIM.

cc: DDA

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ODP/SPD/ISB/ [redacted] (7 Apr 83)

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Retyped: ODP/ [redacted] (11 May 83)

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Original

- Addressee
- 2 - D/ODP
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- 2 - ODP/Registry

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ODP # 83-387

13 Mar 83

MEMORANDUM FOR: Director of Data Processing

FROM:
Director of Current Production and
Analytic Support

SUBJECT: AIM Evaluation

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File -

1. We are about to send our attached AIM evaluation to DI office directors with a note from Bob Clark strongly encouraging them to begin using AIM throughout their offices. I want to give you an opportunity to see it before we do that.

2. My ASG people have been working closely with your DD/P people both in the recent development of AIM and in this evaluation. We regard that effort as a model of cooperation which we hope to continue with you on the Host Based Word Processor development. From our point of view, you have a great success in the AIM effort, and those who pushed its development deserve recognition for a job well done.

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Attachment:
as stated

ADMINISTRATIVE INTERNAL USE ONLY

AIM System Evaluation

Final Report

March 8, 1983

This paper was prepared by [REDACTED], Resource and Technology Center, Office of Current Production and Analytic Support. Comments and queries are welcome and should be directed to the Chief, Resource and Technology Center, CPAS, telephone [REDACTED]

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PREFACE

This report presents the results of an evaluation of ODP's Automatic Information Management (AIM) system conducted by the Resources and Technology Center of the Analytic Support Group, Office of Current Analysis and Analytic Support, DDI. The purpose of this evaluation was to determine as quickly as possible whether AIM should be included in the SAFE Early Capability (SEC) arriving in the Spring of 1983, and if so, whether any changes should be made to AIM.

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Section 1

RECOMMENDATIONS

Include AIM in the SAFE Early Capability

AIM provides the user capabilities so useful--indeed, revolutionary--that its introduction should be not delayed; it should be offered with the SAFE Early Capability. Moreover, its widespread use should be aggressively promoted. We would make this recommendation even if none of our other recommendations can be accommodated. It should be noted, however, that having a terminal right on one's desk is an essential ingredient to AIM's utility. Current plans for the SEC include a terminal on every desk; should this be changed, AIM will be significantly less useful (as would any electronic mail system).

While AIM does have some imperfections and deficiencies, all are merely-second order when compared to its capabilities, and none are sufficiently serious to warrant delaying the introduction of AIM. Moreover, ODP is aware of most of the problems; correcting them is just a matter of resources and priorities. Should it be decided to include AIM in the SEC, CSPO could be asked to fund some of this work.

The recommendations below address what to us are the most serious problems.

AIM Users Will Need Basic VM Training

AIM relies on two VM text editing and document formatting facilities, EDIT and SCRIPT. While these facilities are easily learned, it is unlikely many users will attempt to unless formal training is provided. Some of this training may already be required for users of the SEC, however, because its mail profile system will be VM-based.

There is a side benefit to such training that should be noted here. Once basic VM is mastered, the plethora of specialized but powerful facilities there become available--such things as TELLAGRAF for producing charts and graphs, SAS for statistics, and RAMIS for data base creation and query.

Revise the AIM Documentation

The quality of the documentation available to AIM users will determine the success or failure of the system's introduction into the DDI workplace. A good quick-reference guide for beginning users will be

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critical to their successful transition to working in the AIM environment and should reduce the burden on AIM consultants. In addition, advanced users and AIM administrators will need a complete, up to date system manual to be able to customize and enhance AIM for their purposes.

Unfortunately, the existing AIM documentation, three manuals and online "help," suffer from unclear writing and awkward organization. Moreover, they do not document AIM comprehensively. Given the critical importance of its documentation and ODP's already substantial investment in the AIM system, paying a team of professional documenters to rewrite the existing AIM documentation on a crash basis seems to be fully justified if ODP does not have the manpower to do the job itself.

Make System Responses More Informative

System responses should, in general, be sufficiently lucid to allow a user to deduce what has happened (or what went wrong) with a minimum of reflection and backtracking. A number of AIM system responses to user entries are not, and some of the error messages are especially deficient.

Enhance and Modify AIM

AIM could be made more useful for and acceptable to its users by enhancing and modifying it somewhat. The enhancements and modifications involve making certain VM facilities available to AIM users, adding new AIM commands and modifying existing ones, and providing improved document retrieval facilities.

Most VM word processing facilities should be made available in AIM. These include EZPUB, SPELL, HBWP, the Xerox 9700 printer, and some of the facilities of the VM editor (XEDIT) which the AIM editor (SEDIT) lacks. AIM needs some new commands (or command options) too, and some of the existing commands need to be modified. The present means of retrieving documents in AIM is adequate only for very small files. An improvement should be made: while there is a keyword field in the system's index ("header") record for documents and it is possible to search both this keyword field and the subject field, this search capability needs to be improved. Finally, AIM administrators are going to need some better facilities for manipulating folders and folder access.

Provide Regional, Correspondence-quality Printers

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Even after AIM becomes widely used, we will need to produce correspondence-quality printed copies of AIM memos, notes, and other documents. ODP's existing facilities are inadequate. What is needed is a network of small easily-installed printers requiring minimal attention. They need to be sufficiently numerous so that one is readily accessible (within a two-minute walk, say) to every AIM user. ODP recognizes this need and is investigating the Xerox 2700 printer for this purpose.

Support "Custom Tailoring"

While AIM is an exceptionally useful tool in its basic, as-delivered form, much of its power derives from built-in facilities to custom tailor it to particular applications and users. Sooner or later, probably sooner, users will discover this potential. And their interest can be expected to snowball as the word gets around.

Unfortunately, this custom tailoring requires programming skills beyond what most users will have or should be asked to learn. ODP foresaw this and built the "administrator" concept into AIM: a user-oriented programmer/consultant who would tailor AIM to the needs of individuals or components. The software to support administrators is present; the people are not.

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Section 2

BACKGROUND

AIM in a Nutshell

The Automatic Information Management System (AIM) is a general-purpose facility on ODP's VM/SP time-sharing computers that provides an automated environment for electronically creating, editing, sending, receiving, and filing documents. AIM was designed to be flexible enough to accommodate a wide variety of uses yet still simple enough for the general user to learn to use it easily. These contradictory objectives were achieved through complex command parameters having system-provided defaults for nearly everything, an EXEC facility, and provisions for component AIM "administrator" user consultants. Moreover, AIM has a number of special features to accommodate the Agency's security requirements.

Folders and Documents

Things are treated in AIM analogously to how they would be in a paper environment: individual items are "documents" and documents are kept, filed, in "folders." Folders are the basis of AIM's filing system. The user can create as many as desired and a single document can be filed in a number of different folders for cross-referencing. AIM has facilities for listing the contents of each folder and for recalling a particular document. But these facilities do not use a full text search. Folders can be shared among users, under the control of the folder's owner. The owner of a folder can establish an audit trail on it and can also request AIM to notify him when a document is added to the folder. (This is automatically done for each user's "inbox" folder, to which AIM delivers mail from other users.)

Models

While documents can have any format, AIM recognizes certain standard ones, currently "note," "memo," "reply," and "call message," and will automatically create new documents in these formats. This is done by the model facility. The "reply" format is a particularly useful model. After reading a note or memo, the user can compose and send a reply simply by typing "reply"; AIM determines the addressee and subject from the original document.

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In addition to the standard, system-supplied models, a model can be written to produce documents in just about any format the user desires, including fill-in-the-blank forms. And the standard models can be customized if desired.

Aliases and Routing

AIM's "alias" facility lets a user define a list of short nicknames for his correspondents. When an alias is used, AIM automatically substitutes the correspondent's full name and, if the user has provided one, his title. The alias facility also can be used to define a group of addressees, a branch, say. When this alias is used, AIM sends the document to each person on the list.

In addition to parallel routing using aliases, documents can be routed serially using "through" addressees. AIM sets up serial routing automatically when memos with "through" lines are created. Serial routing also can be arranged manually. Should a "through" recipient not want to forward a document (because, say, he does not concur in it), he can REJECT it and provide an explanation. The REJECTED document, and the explanation, will be returned to the originator.

One very useful feature of AIM allows the user to determine the routing of any document being displayed, the document's present location on the routing list, and whether each recipient has read it yet. In addition, one can create a "registered" document; AIM will return a "receipt" to the sender when the addressee sees the document. This receipt contains the date and time the addressee first displayed the "registered" document.

ODP's AIM Primer

Should you want to know more about what AIM can do and how it does it, you might begin by consulting ODP's primer on AIM, titled "AIM Introduction." This primer is available in the ODP Technical Library, Headquarters room GA19.

Genesis of this Evaluation

The SAFE Early Capability (SEC) to be delivered this Spring lacks an electronic office system to support electronic correspondence between its users: document creation, delivery, and filing. AIM is the only system which could provide SEC users this capability, at least in the near-term. Moreover, the cost of adding AIM to the SEC would be very small. This is because the AIM software is owned by the Agency

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and already is running on VM/SP time-sharing computers like the one that will be included in the SEC.

While it might appear to be self-evident that AIM ought to be added to the SEC, there are two worries. One is that AIM's utility might be so limited that even the relatively low costs of including it in the SEC might not be justified. The other is more serious: might AIM be so badly flawed that it would create enough ill will among SEC users to torpedo the entire program? This evaluation focused on these two worries.

Methodology

Over a period of about three months, the Systems Development Branch of the Center used AIM as its primary method of correspondence, document composition, and filing; AIM was used instead of paper whenever possible. In addition, the Chief of the Branch (and the author of this report) used AIM to correspond with his supervisor, the Chief of RTC. It is on these experiences that this evaluation is primarily based.

A number of other sources of working experience, however, were tapped for this evaluation. A memorandum was sent in AIM to every AIM user in the DI (65 of them). Two responded with their thoughts (favorable). Several other of ASG staff have been using AIM extensively; their thoughts have been incorporated here. Finally, some 20 members of OSWR's Pilot Mail Operation branch have been using AIM as the branch mail system for several months. Some of their experiences are reflected in this evaluation too. These are particularly relevant because this branch is doing intelligence analysis in a computer environment that closely resembles that of the SEC.

Time constraints precluded a more formal and intensive evaluation program. But the author believes that this evaluation was sufficiently robust for its intended purpose and that a more thorough evaluation would have yielded essentially the same conclusions as this one did.

Organization of Discussion

The discussion that follows parallels the recommendations already offered. Each recommendation is discussed in detail, rationalized and elaborated upon.

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Section 3

DISCUSSION

Include AIM in the SAFE Early Capability

AIM truly is a revolutionary addition to the DDI workplace. It offers improvements in communications, management, and the efficient use of people and space so dramatic that it should be included in the SAFE Early Capability. Moreover, its widespread use should be aggressively promoted. This assumes, however, that each user will have a personal terminal right on his or her desk. Only with such terminals can AIM's capabilities be fully exploited; without personal terminals, AIM will not revolutionize our way of doing business. But even then, it would be a valuable supplement to a paper-oriented workplace.

There seems to be uniform agreement among AIM users that AIM dramatically improves communication. The "note" and "reply" facilities can be used to replace many phone calls. This eliminates "telephone tag" and provides a written record of the exchange which can easily be shared with others. The distribution of any AIM document can always be displayed by its reader. So the reader can be certain that the appropriate people have gotten copies, or if necessary, further disseminate the document.

The ease of arranging for parallel routing and courtesy copies makes it possible to have "conferences" in AIM; I have observed a number of them spontaneously arise over some issue of common concern to a group of AIM users. In general, AIM gives one far better access to others; the ease with which one can dispatch incoming mail encourages prompt action. And, of course, AIM messages are delivered almost instantaneously, unlike paper memos which can take days to make the trip from one person's out box to another's in box.

Part of AIM's ability to improve communication simply derives from the advantages of the written word over the spoken. Writing something down forces one to be clear and makes one aware of one's own fuzzy thinking. So what is to be communicated tends to be of better quality. And it is understood better in written form: the text can be reread as often as necessary. Moreover, a written record eliminates disputes over what was said. Today, we often rely on verbal communication only because getting something written down is just too much trouble. AIM makes it easy.*

*We have discovered one caution, however: in verbal communication, emotions and intent are communicated through subtle nuances in speech

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Besides improving communications, AIM helps one better organize and manage one's work. The AIM outbox can be used as a "tickler" file. Folders can be created for each project and shared with others. Filing is easy and therefore likely to be done promptly. In addition, copies of documents can be filed in a number of folders for cross-referencing. (This does not waste storage space because only one copy of each document is actually stored; the folders contain just "pointers" to the actual document.) Liberal cross-referencing makes it easier to find and retrieve a document when needed.

An important side benefit of widespread conversion to AIM will be the easing of our space problems. AIM's electronic files should at least moderate the paper explosion and, given a serious push by management, reduce the size of our paper files freeing floor space for people. AIM also will reduce the adverse impact of our present shortage of clerical support. AIM users can do most, if not all, of their own typing, filing, and mailing. Xeroxing will, of course, be unnecessary, and the quantity of paper mail to be sorted and routed will be reduced.

AIM does have some imperfections and deficiencies; the ones we consider most serious are addressed below. None of them are sufficiently serious, however, to jeopardize our goal of office automation, nor to torpedo the entire SEC by association. ODP is aware of most of the problems and is addressing them systematically. We have surfaced none that are unsolvable: eliminating them is simply a matter of resources and priorities. Should it be decided to include AIM in the SEC, CSPO could be asked to fund some of this work.

AIM Users Will Require Basic VM Training

AIM relies on two VM text editing and document formatting programs, SEDIT and SCRIPT. A user need know nothing about SEDIT or SCRIPT to create simple, draft-quality notes, memos, and papers. But most of the word-processing power in AIM can only be obtained by invoking the SEDIT subcommand environment in AIM and using SEDIT and SCRIPT commands directly.

While these facilities are easily learned, it is unlikely many users will attempt to do so unless formal training is provided. Some of this training may already be required for users of the SEC, however, because its mail profile system will be VM-based.

and mannerisms. This process tends to soften the literal message. When communicating by writing, we must remember this missing element and make sure that the cold, hard words alone convey all that is needed.

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There is a side benefit to such training that should be noted here. Once basic VM is mastered, the plethora of specialized but powerful facilities there become available--such things as TELLAGRAF for producing charts and graphs, SAS for statistics, and RAMIS for data base creation and query.

Revise the AIM Documentation

The quality of the documentation available to AIM users will determine the success or failure of the system's introduction into the DDI workplace. A good quick-reference guide for beginning users will be critical to a successful transition to working in the AIM environment and should reduce the burden on AIM consultants. In addition, advanced users and AIM administrators will need a complete, up to date system manual to be able to customize and enhance AIM for their purposes.

There are three manuals for AIM users: an introductory primer, a user's manual, and an "administrator's" guide for advanced users. While this is an appropriate constellation of manuals, all three suffer from unclear writing and awkward organization. And taken together, they do not document AIM comprehensively.

Error messages, for instance, are completely undocumented: the user's manual refers the reader to the administrator's guide, but no discussion of error messages is to be found there or anywhere else. The command descriptions in the user's manual lack a much-needed section on system responses, both normal and abnormal. The manual also needs more discussion on the system's interpreter and the more common system variables. It would be useful to have the system architecture described somewhere, and how AIM interacts with VM.

Given the critical importance of its documentation and ODP's already substantial investment in the AIM system, paying a team of professional documenters to rewrite the existing AIM documentation on a crash basis seems to be fully justified if ODP does not have the manpower to do the job itself. Special attention should be given to producing a suitable primer for training purposes and an easy to use reference guide for journeyman users. In any event, once the documentation is put right, it must be scrupulously maintained, especially since the AIM system will continue to be modified and enhanced. Perhaps the system's documentation ought to be kept in AIM itself, available to any user who needs an updated copy.

The online "help," because it is nothing more than the text from the user's manual, suffers the same faults as the printed documentation, and one more. It is organized by command hierarchy. Unless

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one knows the appropriate command in the first place, one cannot get help from "help." Help should also be accessible through words which, although not AIM commands or parameters, describe what the user is trying to do.

Make System Responses More Informative

System responses should be sufficiently lucid to allow a user to deduce what has happened (or what went wrong) with a minimum of reflection and backtracking. Unfortunately, some AIM system responses are neither very helpful, clear, nor illuminating.

An example is the "DOCUMENT NOT FOUND" response to the LIST command. A user gets this same response when he:

- Tries to list the contents of a nonexistent folder (perhaps because he misspelled a folder's name.
- Lists the contents of an empty folder.
- Asks that documents of a certain type be displayed when none are in any of the user's folders.

In this instance, three different messages should be provided.

Another error message in need of modification is the "LABELS AND LITERALS MAY NOT BE COMBINED" system response to the user including an apostrophe in his response to a prompt (for, say, the subject of a note). This, incidentally, should not cause a problem as it does, which will be mentioned below. "SYNTAX ERROR IN COMMAND LINE" is an over-used response to a variety of problems, including using a "reserved word" in a command line for other than its intended purpose. A final example is this exchange (the user's entry is in lower case):

```
>putd /users
PARS0350 - SYNTAX ERROR IN COMMAND LINE
```

The user was trying to remove and put aside lines in the document down to (but not including) the line containing the character string "users." The command syntax is correct according to the documentation, but AIM actually requires (for this command only) a final "/". Most users probably would not arrive at this conclusion without considerable experimentation.

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Even when things are proceeding normally, the user needs feedback. But AIM sometimes provides the user inadequate feedback about what mode he is in. If for instance, the user CANCELS the creation of a new document, the system gives no visible response whatever. When the document creation process terminates abnormally, it is not always clear that this is what has happened: sometimes the model just rejects the users response and waits for a new, correct one; other times, the model terminates abruptly.

Enhance and Modify AIM

AIM could be made more useful for and acceptable to its users by enhancing and modifying it somewhat. The enhancements and modifications involve making certain VM facilities available to AIM users, adding new AIM commands and modifying existing ones, and providing improved document retrieval facilities.

Most VM word processing facilities should be made available in AIM. These include:

- EZPUB, the DDI's Computerized Publication Facility.
- SPELL, VM's spelling verification program.
- HBWP, the Host-Based Word Processor system for the Delta Data 7260 terminal.
- The Xerox 9700 printer.
- Some of the facilities of the VM editor (XEDIT) which the AIM editor (SEEDIT) lacks*.

Some of the existing commands need to be modified. ERASE is an example. It is too easy to erase the wrong document; at a minimum, ERASE should provide some kind of confirming prompt before actually erasing anything. An even better solution under consideration in ODP is to not actually erase anything directly. Instead, documents would be MOVED to a "wastebasket" folder from which the system would periodically purge the oldest documents.

WAIT doesn't work in Edit, and PUTD doesn't work as documented: the final character string delimiter is not optional and leaving it out produces a mysterious syntax error. There often is interference

* Specifically, these are line-span and case-ignore for the LOCATE command, and the ability to edit multiple documents at once.

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between AIM commands and SEDIT subcommands, which AIM seems to resolve in favor of AIM commands. This is contrary^{to} what happens in VM and is therefore confusing to experienced users. As noted above, the AIM interpreter cannot handle imbedded apostrophes in input; this needs to be fixed.* Some improvements need to be made to the AIM-CAM interface. In particular, the &CAMREAD command needs to be modified to permit longer reads, or alternatively, to make it possible to read portions of the screen.

Some new commands to provide additional functionality would be useful. The most commonly requested one is a RETRACT command to reclaim documents mistakenly sent. While the REFERENCE command is very useful, a called program (or the like) is needed, however, to allow a user to insert references into any document without having to master the intricate manual procedure.

The present means of retrieving documents in AIM--visually inspecting a list of each folder's contents--is adequate only for very small files. An improvement should be made: while there is a keyword field in the system's index ("header") record for documents and it is possible to search both this keyword field and the subject field, this search capability needs to be improved.

It seems clear that AIM administrators will need better facilities to manipulate folders and folder access. In particular, it should be possible to change folder ownership, to rename folders, and to use aliases when giving folder access. Currently, there is a three-level hierarchy for models and aliases: system, administrator, and user. It appears that a fourth would be useful, a "super" administrator at, say, the directorate level.

Provide Regional, Correspondence-quality Printers

Better printer support must be provided before AIM will be accepted widely. Although contrary to the spirit and philosophy of AIM, the need will always exist for printed copies of AIM memos, notes, and other documents. AIM users will be reluctant to commit memos to the system unless they can be assured of getting them out in hard copy, ready to send, within 30 or so minutes. And users will not tolerate an extended hike to pick up their printed copies; they'll continue to use their typewriters and NBI's instead.

*One fix would be a command to change the interpreter's delimiter character. Another would be an escape character.

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The current printer facilities are inadequate: print queues are sometimes hours long, and there are only two print pick-up points in the building. What is needed is a network of small, undemanding printers sufficiently numerous so that one is within a two minute or so walk for every AIM user and so that long print queues never develop. The IBM 6670 printer is ODP's current offering for a regional printer. We have tried and failed to convince DDI offices to install them in their registries. The offices felt that they are too big and demand too much logistical effort.

ODP is aware of this problem and is investigating solutions. The Xerox 2700 printer, one possibility they are currently investigating, looks very promising. But whatever printer is chosen will be accepted by DDI offices only if it is roughly the size of a small Xerox machine and no more demanding of its environment for space, cooling, and power.

Support "Custom Tailoring"

AIM is an exceptionally useful tool in its basic, as-delivered form. But it becomes especially powerful when its built in facilities to custom tailor it to particular applications and users are exercised. Custom tailoring in AIM is done by creating "models," "alias" files, and command procedures or "Execs."

Models are used to create new documents in some standard format without the user having to specify the particulars. Standard models already exist in AIM for memos, notes, telephone messages, and a few other things. When using the memo model, for instance, the user is asked for the addressees, classification, and subject. Then AIM asks that the text be entered. Once this is done, the user has a finished memo, properly formatted, and (if he or she has typed carefully) ready to send or have printed. I have successfully created models for constructing forms and for creating new EZPUB files. The model facility seems to be sufficiently flexible to support models for anything that can be produced with a typewriter.

Alias files contain nicknames and titles for one's correspondents, and distribution lists for parallel routing. While easier to create than models, most users still will require help initially. Most users will be able to maintain their alias file once it has been created, however.

AIM execs allow users to tailor native AIM commands to their own needs by, for instance, specifying options different from the system defaults. In addition, the execs let users execute commonly used sequences of commands in a single step. And the execs can be used to make some of the facilities in VM work as if they actually were part of AIM.

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Sooner or later, probably sooner, users will discover the potential of these facilities. And their interest can be expected to snowball as the word gets around and people see what can be done. Unfortunately, this custom tailoring requires programming skills beyond what most users will have or should be asked to learn. Most of our applications and system programmers could pick them up very quickly, as could a sophisticated and experienced VM user. But it simply would not be advantageous to ask (or realistic to expect) many AIM users to learn these features well enough to get alone on their own.

ODP foresaw this and built the "administrator" concept into AIM: a user-oriented programmer/consultant who would tailor AIM to the needs of individuals or components. The software to support administrators is present; the people are not. Administrators should be positioned both horizontally and vertically in the organization. There ought to be one at the branch or division level, one at the office level, and one or more at the DDI level, perhaps in ASG.

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